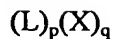


WHAT IS CLAIMED IS:

1. A compound of formula I:



I

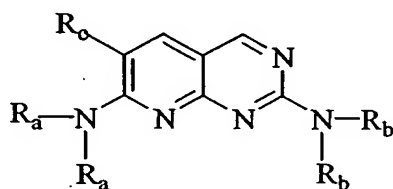
and pharmaceutically acceptable salts thereof; wherein:

$p$  is an integer of from 2 to 10;

$q$  is an integer of from 1 to 20;

each L is a ligand independently selected from the group consisting of:

- (i) a moiety of formula III:



III

wherein

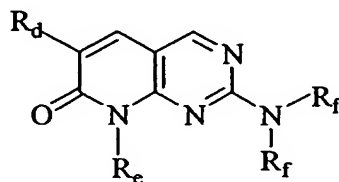
each  $R_a$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, aryl, heteroaryl and a covalent bond linking the moiety to the linker;

each  $R_b$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, aryl, heteroaryl and a covalent bond linking the moiety to the linker;

$R_c$  is selected from the group consisting of aryl, alkaryl, heteroaryl and heterocycle;

provided one and only one of  $R_a$  and  $R_b$  comprises a covalent bond linking the moiety to the linker;

- (ii) a moiety of formula IV:



IV

wherein

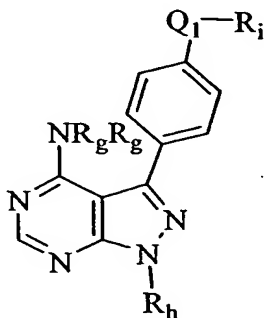
$R_d$  is selected from the group consisting of aryl, alkaryl, heteroaryl and heterocycle;

$R_e$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

each  $R_f$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, aryl, heteroaryl and a covalent bond linking the moiety to the linker;

provided one and only one of  $R_e$  or  $R_f$  comprises a covalent bond linking the moiety to the linker;

(iii) a moiety of formula V:



V

wherein

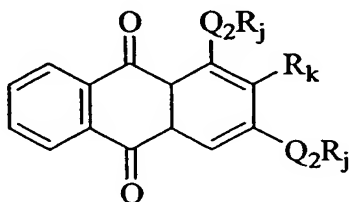
each  $R_g$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl and acyl;

$R_h$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl and acyl;

$R_i$  is a covalent bond linking the moiety to the linker;

$Q_1$  is  $NR_j$ , O, S, alkylene or a covalent bond, where  $R_j$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

(iv) a moiety of formula VI:



VI

wherein

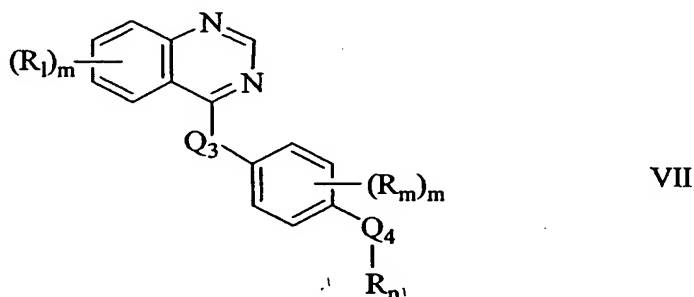
each  $R_j$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

$R_k$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, alkoxy, hydroxy, halogen and -CHO;

each  $Q_2$  is independently  $NR_j$ , O and S, where  $R_j$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

provided one and only one of  $R_j$  comprises a covalent bond linking the moiety to the linker;

(v) a moiety of formula VII:



wherein

each  $R_l$  and  $R_m$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

$R_n$  is a covalent bond linking the moiety to the linker;

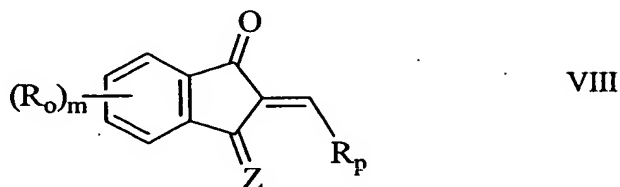
$Q_3$  is  $NR_n$ , O, S or alkylene;

$Q_4$  is  $NR_n$ , O, S, alkylene or a covalent bond, where each  $R_n$  in  $Q_3$  and  $Q_4$  is

independently hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

each  $m$  is independently an integer from 1 to 3;

(vi) a moiety of formula VIII:



10 wherein

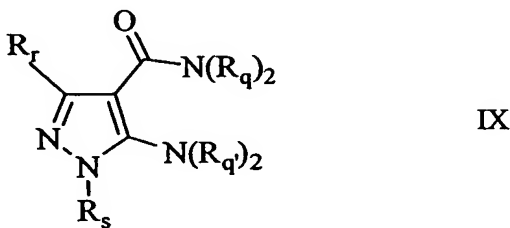
each  $R_o$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

15  $R_p$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker or with  $-OZ'$  where  $Z'$  is a covalent bond linking the moiety to the linker;

$Z$  is 2H or O;

20  $m$  is an integer from 1 to 3;

(vii) a moiety of formula IX:



wherein

30 each  $R_q$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl,

substituted cycloalkyl, aryl, heteroaryl, heterocyclic and a covalent bond linking the moiety to the linker;

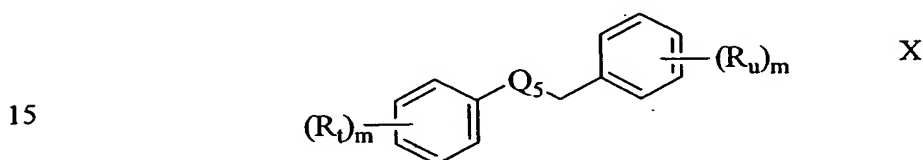
each  $R_q$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl and acyl;

5  $R_s$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl and acyl;

$R_r$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker;

provided one and only one of  $R_q$  or  $R_r$  comprises a covalent bond linking the moiety to the linker;

(viii) a moiety of formula X:



wherein

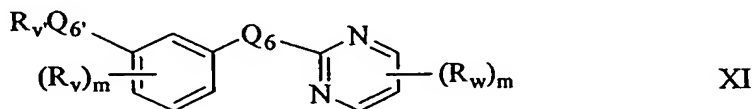
each  $R_t$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

each  $R_u$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy, substituted thioalkoxy and a covalent bond linking the moiety to the linker;

30  $Q_5$  is  $NR_t$ , O, S or alkylene, where  $R_t$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

each  $m$  is independently an integer from 1 to 3;  
 provided one and only one of  $R_u$  comprises a covalent bond linking the moiety to  
 the linker;

(ix) a moiety of formula XI:



10 wherein

each  $R_v$  is independently selected from the group consisting of hydrogen, alkyl,  
 substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino,  
 acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy,  
 aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl,  
 15 heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

$R_v$  is a covalent bond linking the moiety to the linker;

each  $R_w$  is independently selected from the group consisting of hydrogen, alkyl,  
 substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino,  
 acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy,  
 20 aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl,  
 heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

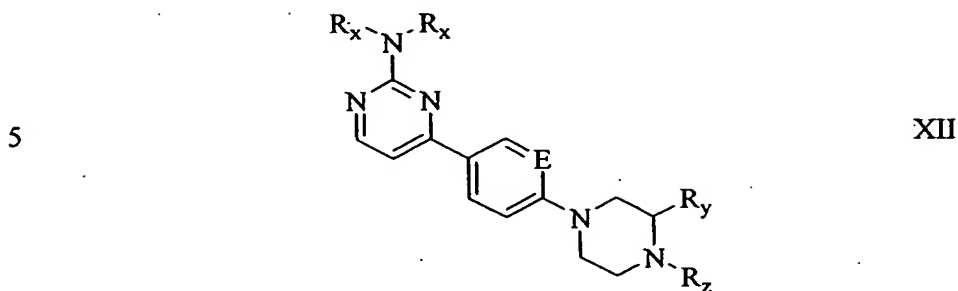
$Q_6$  is  $NR_w$ , O, S or alkylene, where  $R_w$  is hydrogen, alkyl, substituted alkyl,  
 alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

$Q_6$  is  $NR_v$ , O, S or alkylene, where  $R_v$  is hydrogen, alkyl, substituted alkyl,  
 25 alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

each  $m$  is independently an integer from 1 to 3;

30

(x) a moiety of formula XII:



10 wherein

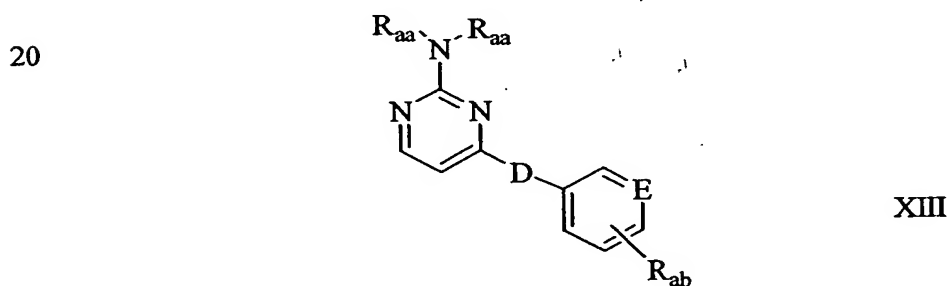
each  $R_x$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, heteroaryl and heterocyclic;

$R_y$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl and substituted alkynyl;

$R_z$  is a covalent bond linking the moiety to the linker;

E is CH or N;

(xi) a moiety of formula XIII:



25

wherein

each  $R_{aa}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, heteroaryl and heterocyclic;

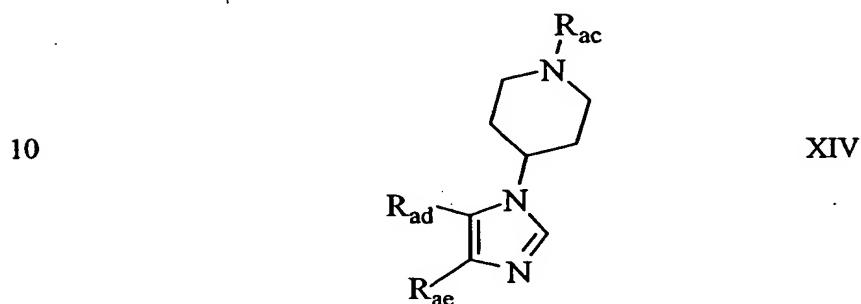
$R_{ab}$  is alkyl, substituted alkyl, alkoxy, substituted alkoxy, amino, substituted amino, thioalkoxy, substituted thioalkoxy, wherein the alkyl, substituted alkyl, alkoxy, substituted

alkoxy, amino, substituted amino, thioalkoxy or substituted thioalkoxy group is substituted with a covalent bond linking the moiety to the linker;

D is a covalent bond,  $\text{NR}_{ab}$ , O or S, where  $\text{R}_{ab}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

5 E is CH or N;

(xii) a moiety of formula XIV:



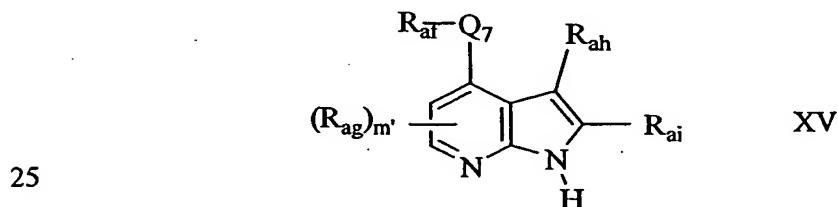
wherein

15  $\text{R}_{ac}$  is a covalent bond linking the moiety to the linker;

$\text{R}_{ad}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, heteroaryl and heterocyclic;

$\text{R}_{ae}$  is aryl or heteroaryl;

20 (xiii) a moiety of formula XV:



wherein

$\text{R}_{ar}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl and acyl;

30 each  $\text{R}_{ag}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino,



acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

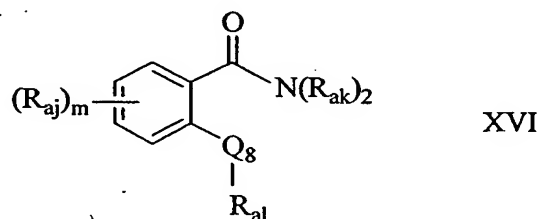
$R_{ah}$  is aryl or heteroaryl;

5  $R_{ai}$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker;

$Q_7$  is  $NR_{ar}$ , O, S or alkylene, where  $R_{ar}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

$m'$  is 1 or 2;

10 (xiv) a moiety of formula XVI:



15

wherein

each  $R_{aj}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

20

$R_{ai}$  is aryl or heteroaryl;

each  $R_{ak}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, heteroaryl, heterocyclic, and a covalent bond linking the moiety to the linker;

25

$Q_8$  is  $NR_{ar}$ , O, S or alkylene, where  $R_{ar}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

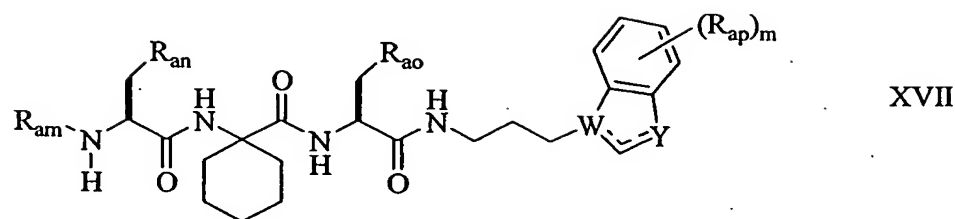
30

$m$  is an integer from 1 to 3;

provided one and only one of  $R_{ak}$  comprises a covalent bond linking the moiety to

the linker;

(xv) a moiety of formula XVII:



wherein

10  $R_{am}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

$R_{an}$  is selected from the group consisting of 4-phosphonomethylphenyl, 4-phosphonodifluoromethylphenyl, 3-carboxy-4-carboxymethoxyphenyl and 3,4-dihydroxyphenyl;

15  $R_{ao}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

20 each  $R_{ap}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

25 W is N or CH;

Y is O, S, NH, N-Z', CH<sub>2</sub> or CH-Z', where Z' is a covalent bond linking the moiety to the linker;

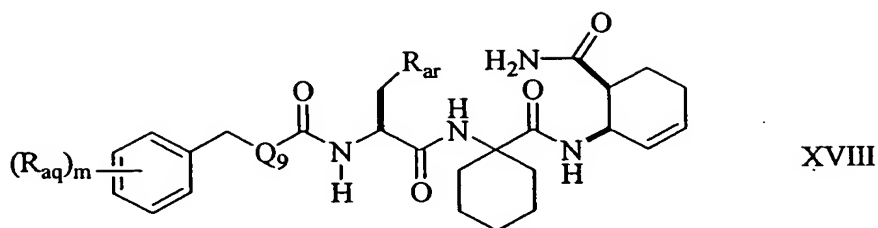
$m$  is an integer from 1 to 3;

---- is an optional double bond;

30 provided one and only one of  $R_{am}$  and Y comprises a covalent bond linking the

moiety to the linker;

(xvi) a moiety of formula XVIII:



wherein

10 each  $R_{aq}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy, substituted thioalkoxy, a covalent  
15 bond linking the moiety to the linker and  $-NH-Z'$ , where  $Z'$  is a covalent bond linking the moiety to the linker;

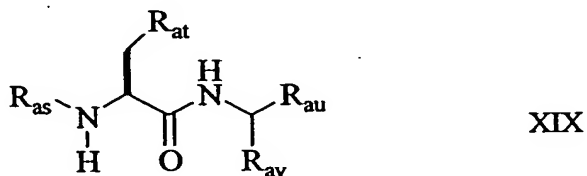
$R_{ar}$  is selected from the group consisting of 4-phosphonomethylphenyl, 4-phosphonodifluoromethylphenyl, 3-carboxy-4-carboxymethoxyphenyl and 3,4-dihydroxyphenyl;

20  $Q_9$  is  $NR_{aq'}$ , O, S or alkylene, where  $R_{aq'}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

$m$  is an integer from 1 to 3;

provided one and only one of  $R_{aq}$  comprises a covalent bond linking the moiety to the linker;

25 (xvii) a moiety of formula XIX:



wherein

$R_{as}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

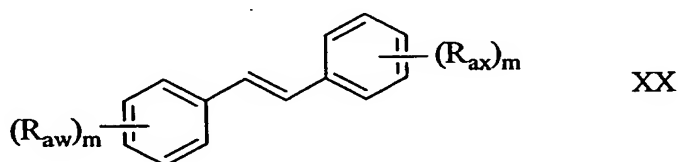
5  $R_{at}$  is selected from the group consisting of 4-phosphonomethylphenyl, 4-phosphonodifluoromethylphenyl, 3-carboxy-4-carboxymethoxyphenyl and 3,4-dihydroxyphenyl;

$R_{au}$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker or with  $-OZ'$ , where  $Z'$  is a covalent bond  
10 linking the moiety to the linker;

$R_{av}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and alkaryl;

provided one and only one of  $R_{as}$  and  $R_{au}$  comprises a covalent bond linking the moiety to the linker;

15 (xviii) a moiety of formula XX:



20

wherein

each  $R_{au}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy,  
25 aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

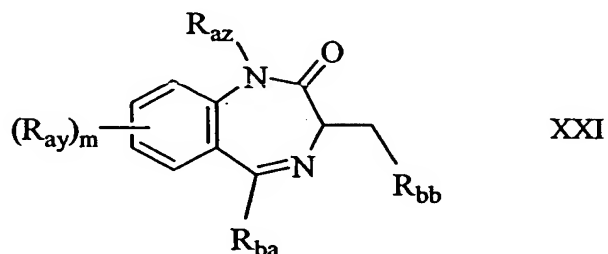
each  $R_{ax}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy,  
30 aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy, substituted thioalkoxy, a covalent

bond linking the moiety to the linker and -OZ', where Z' is a covalent bond linking the moiety to the linker;

each  $m$  is independently an integer from 1 to 3;

provided one and only one of  $R_{ax}$  comprises a covalent bond linking the moiety to the linker;

(xix) a moiety of formula XXI:



wherein

each  $R_{ay}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

$R_{az}$  is selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, alkaryl, acyl and a covalent bond linking the moiety to the linker;

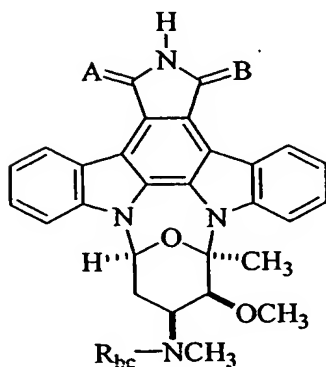
$R_{ba}$  is aryl or heteroaryl;

$R_{bb}$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker or with -OZ', where Z' is a covalent bond linking the moiety to the linker;

$m$  is an integer from 1 to 3;

provided one and only one of  $R_{az}$  or  $R_{bb}$  comprises a covalent bond linking the moiety to the linker;

(xx) a moiety of formula XXII:



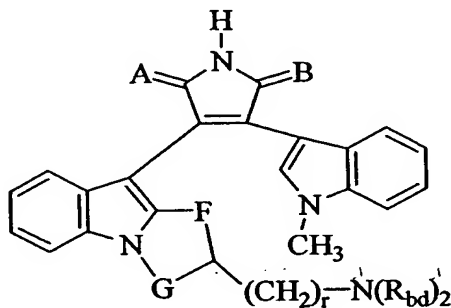
XXII

wherein

$R_{bc}$  is a covalent bond linking the moiety to the linker;

A and B are independently selected from the group consisting of 2H, O and S;

(xxi) a moiety of formula XXIII:



XXIII

wherein

each  $R_{bd}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

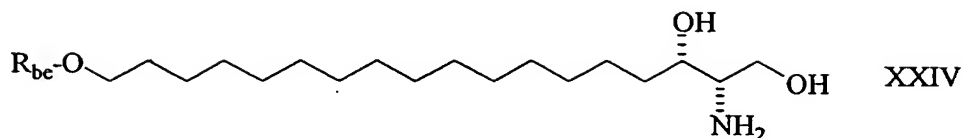
A and B are independently selected from the group consisting of 2H, O and S;

F and G are independently  $-CH_2-$  or  $-CH_2CH_2-$ ;

$r$  is an integer from 0 to 2;

provided one and only one of  $R_{bd}$  comprises a covalent bond linking the moiety to the linker;

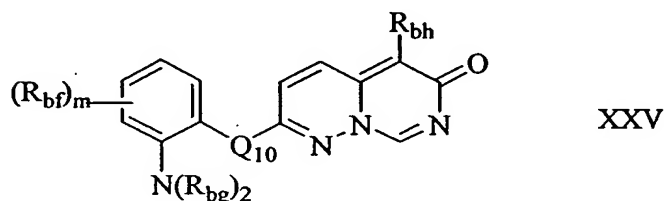
(xxii) a moiety of formula XXIV:



wherein

$R_{be}$  is a covalent bond linking the moiety to the linker;

(xxiii) a moiety of formula XXV:



15

wherein

each  $R_{bt}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy and substituted thioalkoxy;

each  $R_{bg}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

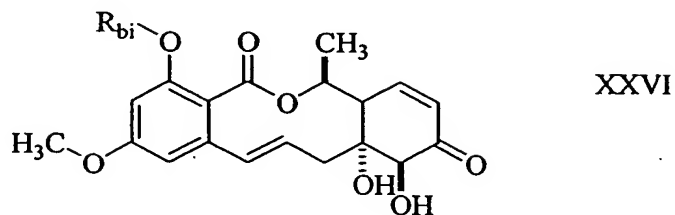
25  $R_{bh}$  is aryl, heteroaryl or heterocyclic;

$Q_{10}$  is  $NR_{br}$ , O, S or alkylene, where  $R_{br}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

$m$  is an integer from 1 to 3;

provided one and only one of  $R_{bg}$  comprises a covalent bond linking the moiety to the linker;

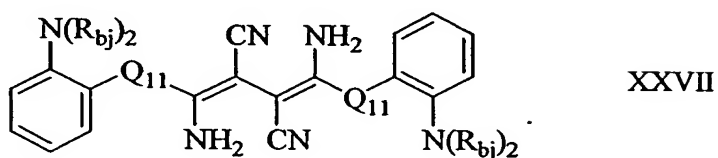
(xxiv) a moiety of formula XXVI:



wherein

$R_{bi}$  is a covalent bond linking the moiety to the linker;

(xxv) a moiety of formula XXVII:



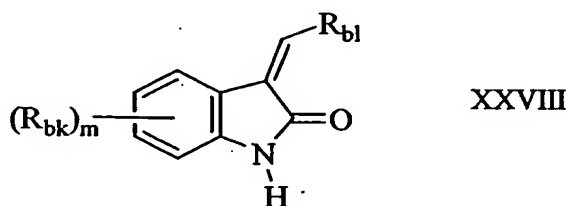
wherein

each  $R_{bj}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl and a covalent bond linking the moiety to the linker;

$Q_{11}$  is  $NR_{bj}$ , O, S or alkylene, where  $R_{bj}$  is hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl or acyl;

provided one and only one of  $R_{bj}$  comprises a covalent bond linking the moiety to the linker;

(xxvi) a moiety of formula XXVIII:





wherein

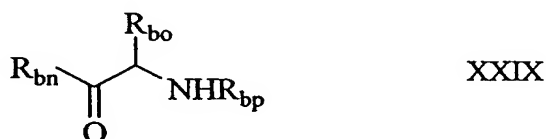
each  $R_{bk}$  is independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, acyl, acylamino, acyloxy, alkoxy, substituted alkoxy, amino, substituted amino, aminoacyl, aminoacyloxy, aryl, carboxyl, carboxyalkyl, cyano, cycloalkyl, substituted cycloalkyl, halogen, heteroaryl, heterocyclic, hydroxy, oxyacylamino, nitro, thioalkoxy, substituted thioalkoxy,  $-SO-R_{bk}$ , and

$-SO_2-R_{bk}$ , where  $R_{bk}$  is alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, heteroaryl or heterocyclic;

$R_{bl}$  is aryl or heteroaryl, wherein the aryl or heteroaryl group is substituted with a covalent bond linking the moiety to the linker or with  $-(CH_2)_u-Z'$ , where  $Z'$  is a covalent bond linking the moiety to the linker and  $u$  is an integer from 1 to 3;

$m$  is an integer from 1 to 3;

(xxvii) a moiety of formula XXIX:



wherein

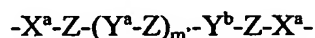
$R_{bn}$  is selected from the group consisting of alkoxy, substituted alkoxy, hydroxy and  $-OZ'$ , where  $Z'$  is a covalent bond linking the moiety to the linker;

$R_{bo}$  is aryl or heteroaryl;

$R_{bp}$  is acyl, alkoxycarbonyl and a covalent bond linking the moiety to the linker;

provided one and only one of  $R_{bn}$  and  $R_{bp}$  comprises a covalent bond linking the moiety to the linker;

and each  $X$  is a linker independently selected from a group of the formula:



wherein

$m'$  is an integer of from 0 to 20;

X<sup>a</sup> at each separate occurrence is selected from the group consisting of -O-, -S-, -NR-, -C(O)-, -C(O)O-, -C(O)NR-, -C(S)-, -C(S)O-, -C(S)NR- or a covalent bond;

Z is at each separate occurrence is selected from the group consisting of alkylene, substituted alkylene, cycloalkylene, substituted cycloalkylene, alkenylene, substituted alkenylene, alkynylene, substituted alkynylene, cycloalkenylene, substituted cycloalkenylene, arylene, heteroarylene, heterocyclene, or a covalent bond;

Y<sup>a</sup> and Y<sup>b</sup> at each separate occurrence are selected from the group consisting of: -C(O)NR'-, -NR'C(O)-, -NR'C(O)NR'-, -C(=NR')-NR'-, -NR'-C(=NR')-, -NR'-C(O)-O-, -N=C(R)-NR'-, -P(O)(OR')-O-, -S(O)<sub>n</sub>CR'R''-, -S(O)<sub>n</sub>-NR'-, -S-S- and a covalent bond; where *n* is 0, 1 or 2; and

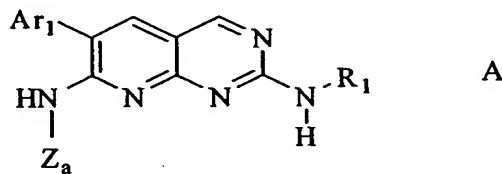
R, R' and R'' at each separate occurrence are selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, substituted alkenyl, cycloalkenyl, substituted cycloalkenyl, alkynyl, substituted alkynyl, aryl, heteroaryl and heterocyclic.

2. The compound of Claim 1, wherein *q* is less than *p*.

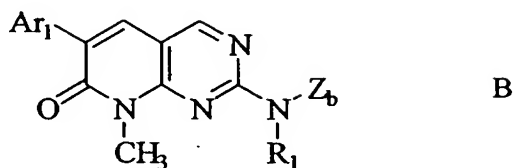
3. The compound of Claim 2, wherein *p* is 2 and *q* is 1.

4. The compound of Claim 1, wherein each ligand is independently selected from the group consisting of:

(i) a moiety of formula A:



(ii) a moiety of formula B:



wherein, in formula A and B,

R<sub>1</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and -(CH<sub>2</sub>)<sub>v</sub>-NR<sub>28</sub>R<sub>29</sub>, where v is an integer from 2 to 4;

Ar<sub>1</sub> is selected from the group consisting of an aryl, alkaryl and heterocycle;

R<sub>28</sub> is selected from group consisting of hydrogen and alkyl of 1 to 6 carbon atoms;

R<sub>29</sub> is selected from the group consisting of 4-pyrimidinyl,

2-methylaminopyrimidin-4-yl, 2-phenoxyprymidin-4-yl,

2-(4-methoxyphenoxy)pyrimidin-4-yl, 2-(4-fluorophenoxy)pyrimidin-4-yl,

2-(4-aminocarbonylphenoxy)pyrimidin-4-yl, 2-(4-ethylphenoxy)pyrimidin-4-yl,

2-(4-benzyloxyphenoxy)pyrimidin-4-yl, 2-(4-cyanophenoxy)pyrimidin-4-yl,

2-(4-hydroxyphenoxy)pyrimidin-4-yl, 2-(3-methoxyphenoxy)pyrimidin-4-yl,

2-(4-phenylphenoxy)pyrimidin-4-yl, 2-(4-phenoxyphenoxy)pyrimidin-4-yl,

2-(3-hydroxyphenoxy)pyrimidin-4-yl, 2-(2-hydroxyphenoxy)pyrimidin-4-yl,

2-(3,4-methylenedioxyphenoxy)pyrimidin-4-yl, 2-(3-fluorophenoxy)pyrimidin-4-yl,

2-(2-fluorophenoxy)pyrimidin-4-yl, 2-(2-methoxyphenoxy)pyrimidin-4-yl,

2-(3-trifluoromethylphenoxy)pyrimidin-4-yl, 2-(3,4-difluorophenoxy)pyrimidin-4-yl,

2-(4-methylsulfonylphenoxy)pyrimidin-4-yl, 2-(4-methoxyphenoxy)pyrimidin-4-yl,

4-pyridinyl, 2-phenoxypyridin-4-yl, 2-(4-methoxyphenoxy)pyridin-4-yl,

2-(4-fluorophenoxy)pyridin-4-yl, 2-(4-benzyloxyphenoxy)pyrimidin-4-yl,

2-(4-cyanophenoxy)pyrimidin-4-yl, 2-(4-hydroxyphenoxy)pyrimidin-4-yl,

2-(3-methoxyphenoxy)pyrimidin-4-yl, 2-(4-phenylphenoxy)pyrimidin-4-yl,

2-(4-phenoxyphenoxy)pyrimidin-4-yl, 2-(3-hydroxyphenoxy)pyrimidin-4-yl,

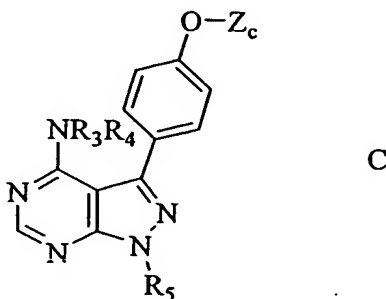
2-(2-hydroxyphenoxy)pyrimidin-4-yl, 2-(3,4-methylenedioxyphenoxy)pyrimidin-4-yl,

2-(3-fluorophenoxy)pyrimidin-4-yl, 2-(2-fluorophenoxy)pyrimidin-4-yl,

2-(2-methoxyphenoxy)pyrimidin-4-yl, 2-(3-trifluoromethylphenoxy)pyrimidin-4-yl,

2-(3,4-difluorophenoxy)pyrimidin-4-yl, 2-(4-methylsulfonylphenoxy)pyrimidin-4-yl, and 2-(4-methoxyphenoxy)pyrimidin-4-yl;

(iii) a moiety of formula C:



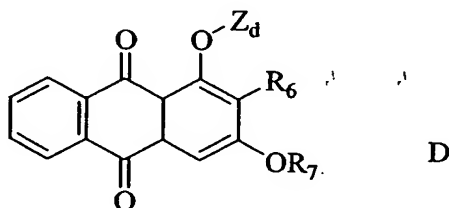
wherein

R<sub>3</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and -CH<sub>2</sub>CH<sub>2</sub>OCH<sub>3</sub>;

15 R<sub>4</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and alkylalkoxy;

R<sub>5</sub> is selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms;

(iv) a moiety of formula D:



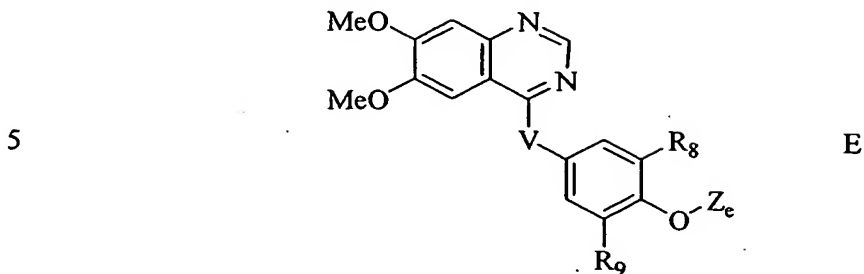
wherein

R<sub>6</sub> is selected from the group consisting of substituted alkyl and -CHO;

R<sub>7</sub> is selected from the group consisting of hydrogen, alkyl and acyl;

30

(v) a moiety of formula E:



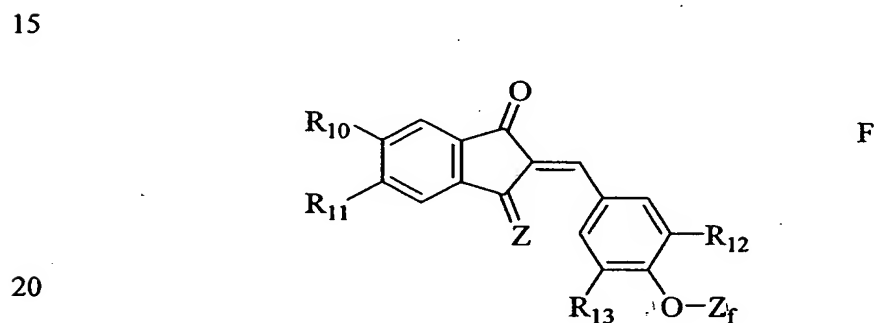
wherein

10  $R_8$  is selected from the group consisting of hydrogen, alkoxy and halogen;

V is selected from the group consisting of amino, alkyl of 1 to 6 carbon atoms, S and O;

$R_9$  is selected from the group consisting of hydrogen, alkoxy and halogen;

(vi) a moiety of formula F:



wherein

$R_{10}$  is selected from the group consisting of hydrogen, alkoxy, amino and substituted amino;

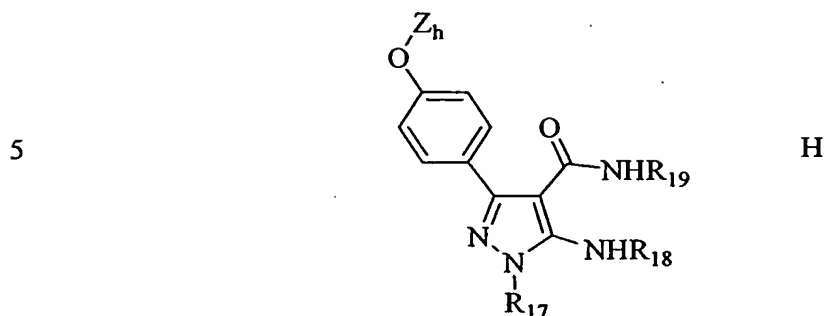
25  $R_{11}$  is selected from the group consisting of hydrogen, alkoxy, halogens, amino, substituted amino and nitro;

$R_{12}$  is selected from the group consisting of hydrogen, hydroxy, alkoxy and halogen;

$R_{13}$  is selected from the group consisting of hydrogen, hydroxy, alkoxy and halogen;

30 Z is selected from the group consisting of 2H and O;

(vii) a moiety of formula H:

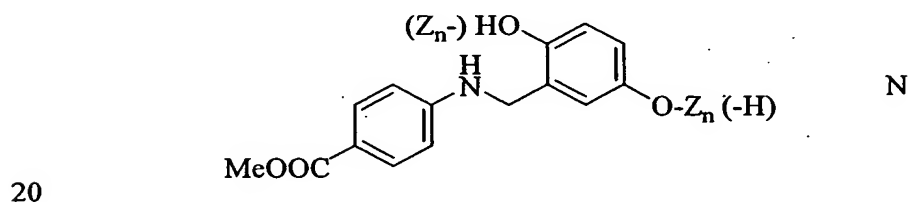


10 wherein

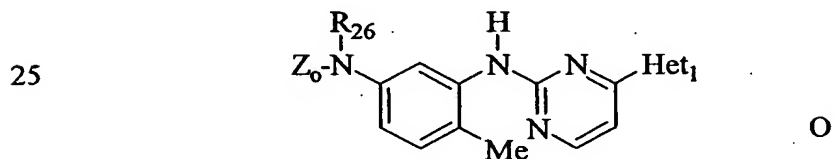
R<sub>17</sub> and R<sub>18</sub> are independently selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms;

R<sub>19</sub> is selected from the group consisting of alkyl of 1 to 6 carbon atoms, -CH<sub>2</sub>C(O)OEt, -(CH<sub>2</sub>)<sub>3</sub>OH, alkaryl, aryl and heteroaryl;

15 (viii) a moiety of formula N:



(ix) a moiety of formula O:

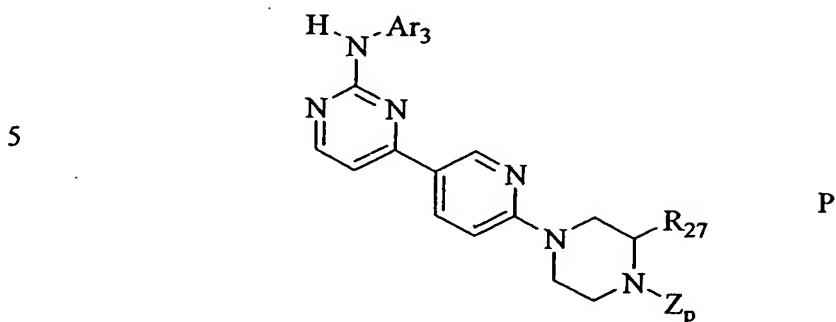


wherein

R<sub>26</sub> is selected from the group consisting of hydrogen and acyl;

30 Het<sub>1</sub> is heterocyclic or heteroaryl;

(x) a moiety of formula P:

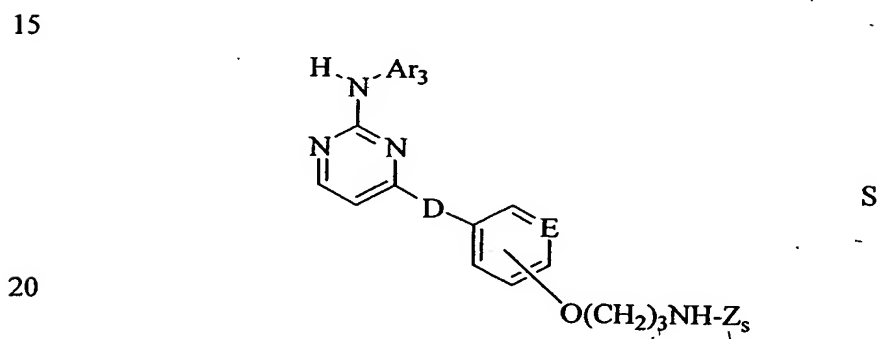


10 wherein

R<sub>27</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and substituted alkyl;

Ar<sub>3</sub> is aryl;

(xi) a moiety of formula S:



wherein

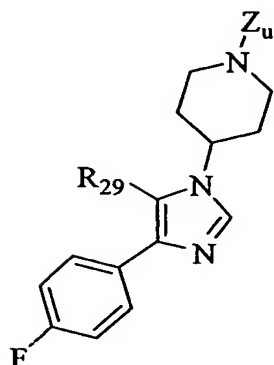
D is selected from the group consisting of a covalent bond, -NH-, -S- and -O-;

E is selected from the group consisting of CH and N;

25 Ar<sub>3</sub> is aryl;

30

(xii) a moiety of formula U:



U

wherein

$R_{29}$  is selected from the group consisting of 4-pyrimidinyl,

2-methylaminopyrimidin-4-yl, 2-phenoxy pyrimidin-4-yl,

2-(4-methoxyphenoxy)pyrimidin-4-yl, 2-(4-fluorophenoxy)pyrimidin-4-yl,

2-(4-aminocarbonylphenoxy)pyrimidin-4-yl, 2-(4-ethylphenoxy)pyrimidin-4-yl,

2-(4-benzyloxyphenoxy)pyrimidin-4-yl, 2-(4-cyanophenoxy)pyrimidin-4-yl,

2-(4-hydroxyphenoxy)pyrimidin-4-yl, 2-(3-methoxyphenoxy)pyrimidin-4-yl,

2-(4-phenylphenoxy)pyrimidin-4-yl, 2-(4-phenoxyphenoxy)pyrimidin-4-yl,

2-(3-hydroxyphenoxy)pyrimidin-4-yl, 2-(2-hydroxyphenoxy)pyrimidin-4-yl,

2-(3,4-methylenedioxyphenoxy)pyrimidin-4-yl, 2-(3-fluorophenoxy)pyrimidin-4-yl,

2-(2-fluorophenoxy)pyrimidin-4-yl, 2-(2-methoxyphenoxy)pyrimidin-4-yl,

2-(3-trifluoromethylphenoxy)pyrimidin-4-yl, 2-(3,4-difluorophenoxy)pyrimidin-4-yl,

2-(4-methylsulfonylphenoxy)pyrimidin-4-yl, 2-(4-methoxyphenoxy)pyrimidin-4-yl,

4-pyridinyl, 2-phenoxy pyridin-4-yl, 2-(4-methoxyphenoxy)pyridin-4-yl,

2-(4-fluorophenoxy)pyridin-4-yl, 2-(4-benzyloxyphenoxy)pyrimidin-4-yl,

2-(4-cyanophenoxy)pyrimidin-4-yl, 2-(4-hydroxyphenoxy)pyrimidin-4-yl,

2-(3-methoxyphenoxy)pyrimidin-4-yl, 2-(4-phenylphenoxy)pyrimidin-4-yl,

2-(4-phenoxyphenoxy)pyrimidin-4-yl, 2-(3-hydroxyphenoxy)pyrimidin-4-yl,

2-(2-hydroxyphenoxy)pyrimidin-4-yl, 2-(3,4-methylenedioxyphenoxy)pyrimidin-4-yl,

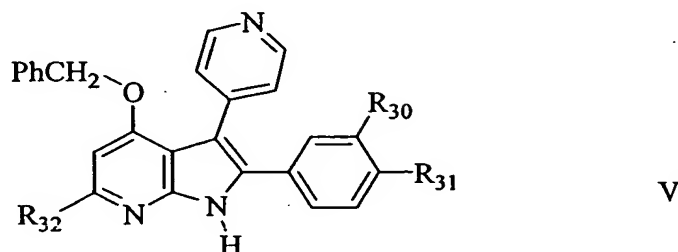
2-(3-fluorophenoxy)pyrimidin-4-yl, 2-(2-fluorophenoxy)pyrimidin-4-yl,

2-(2-methoxyphenoxy)pyrimidin-4-yl, 2-(3-trifluoromethylphenoxy)pyrimidin-4-yl,



2-(3,4-difluorophenoxy)pyrimidin-4-yl, 2-(4-methylsulfonylphenoxy)pyrimidin-4-yl, and 2-(4-methoxyphenoxy)pyrimidin-4-yl;

(xiii) a moiety of formula V:



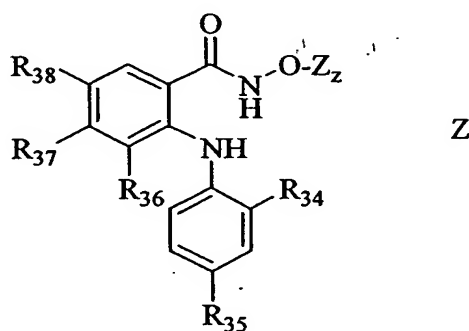
10 wherein

R<sub>30</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, halogen and alkoxy;

R<sub>31</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, halogen, alkoxy and Z<sub>v</sub>;

R<sub>32</sub> is selected from the group consisting of hydrogen, amino, substituted amino, alkoxy, -NHCOCH<sub>3</sub>, and Z<sub>v</sub>, provided one and only one of R<sub>31</sub> and R<sub>32</sub> is Z<sub>v</sub>; and

(xiv) a moiety of formula Z:



wherein

R<sub>34</sub> is selected from the group consisting of hydrogen, hydroxy, alkyl, alkoxy, halogen and substituted alkyl;

R<sub>35</sub> is selected from the group consisting of hydrogen and halogen;

R<sub>36</sub>, R<sub>37</sub>, and R<sub>38</sub> are selected from the group consisting of hydrogen, -NO<sub>2</sub>, alkyl,

substituted alkyl, amino, substituted amino, alkoxy, hydroxy and halogen;

and further wherein  $Z_a, Z_b, Z_c, Z_d, Z_e, Z_f, Z_h, Z_n, Z_o, Z_p, Z_s, Z_u, Z_v$ , and  $Z_z$  are covalent bonds linking the moiety to the linker;

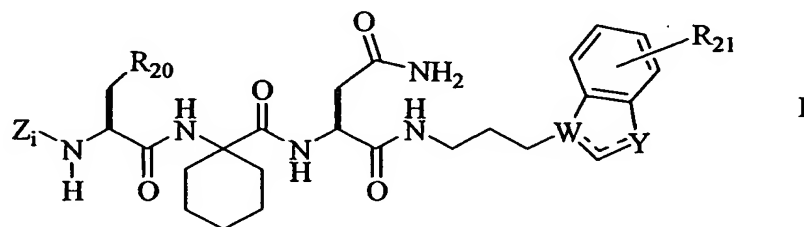
and stereoisomers and analogs thereof.

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5. The compound of Claim 1, wherein each ligand is independently selected from the group consisting of:

(i) a moiety of formula I:

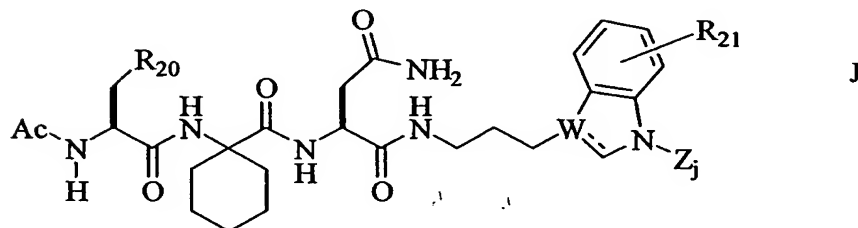
10



15

(ii) a moiety of formula J:

20



wherein, in formula I and J,

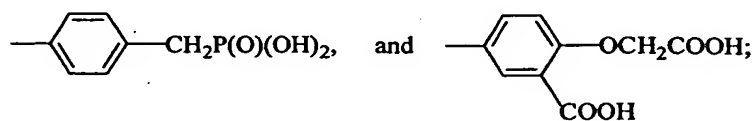
$W$  is selected from the group consisting of  $N$  and  $CH$ ;

25

$Y$  is selected from the group consisting of  $O$ ,  $S$  and  $NH$ ;

$R_{20}$  is selected from the group consisting of:

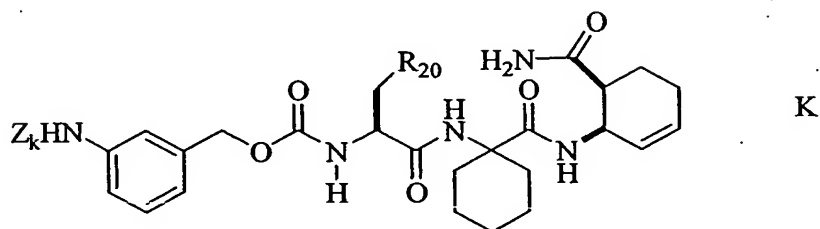
30



$R_{21}$  is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy, amino and substituted amino;

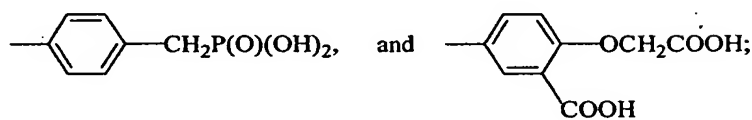
----- is an optional double bond;

(iii) a moiety of formula K:

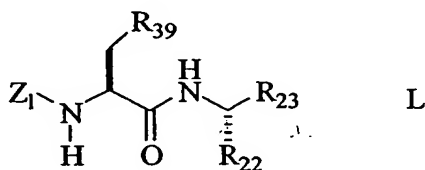


10  
wherein

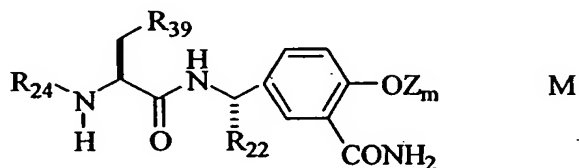
$R_{20}$  is selected from the group consisting of:



(iv) a moiety of formula L:



(v) a moiety of formula M:

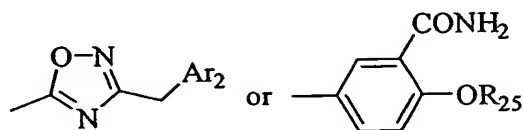


30  
wherein, in formula L and M,

$R_{22}$  is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and substituted alkyl;

$R_{23}$  is

5

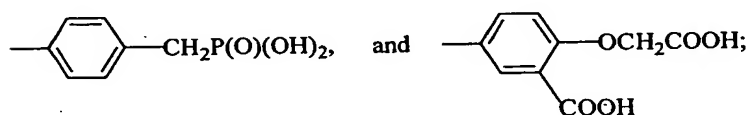


$R_{24}$  is selected from the group consisting of hydrogen and acyl;

10

$R_{25}$  is selected from the group consisting of alkyl and cycloalkyl;

$R_{39}$  is selected from the group consisting of



15

$Ar_2$  is selected from the group consisting of alkyl of 1 to 6 carbon atoms, substituted alkyl and aryl;

and further wherein  $Z_i$ ,  $Z_j$ ,  $Z_k$ ,  $Z_l$ , and  $Z_m$  are covalent bonds linking the moiety to

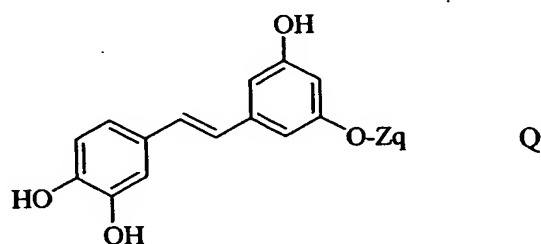
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the linker;

and stereoisomers and analogs thereof.

6. The compound of Claim 1, wherein each ligand is a moiety of formula Q:

25



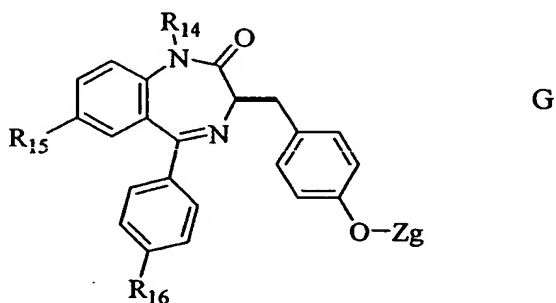
30

wherein

$Z_q$  is a covalent bond linking the moiety to the linker;

and stereoisomers and analogs thereof.

7. The compound of Claim 1, wherein each ligand in the compound of formula I is a moiety of formula G:



wherein

R<sub>14</sub> is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms and alkaryl;

R<sub>15</sub> is selected from the group consisting of hydrogen, alkoxy and halogen;

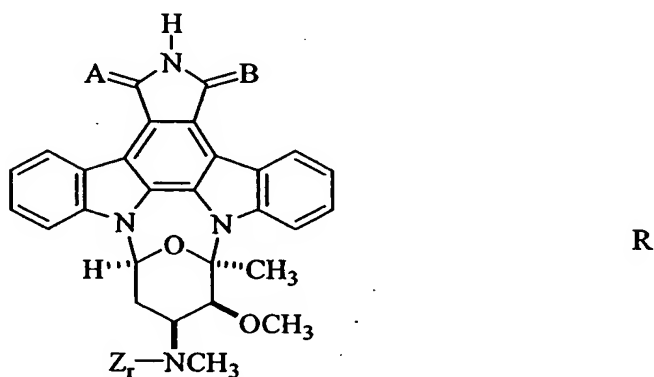
R<sub>16</sub> is selected from the group consisting of hydrogen, alkoxy, hydroxy and halogen;

and further wherein Z<sub>g</sub> is a covalent bond linking the moiety to the linker;

and stereoisomers and analogs thereof.

8. The compound of Claim 1, wherein each ligand is independently selected from the group consisting of:

(i) a moiety of formula R:

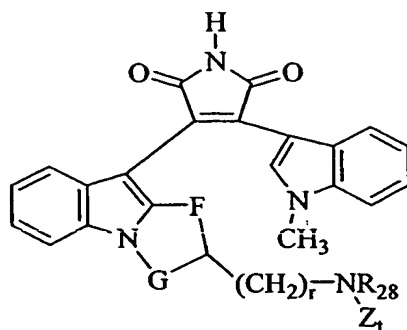


wherein

A and B are independently selected from the group consisting of 2H, S and O;

(ii) a moiety of formula T:

5



T

10

wherein

F is selected from the group consisting of  $-CH_2-$  and  $-CH_2CH_2-$ ;

G is selected from the group consisting of  $-CH_2-$  and  $-CH_2CH_2-$ ;

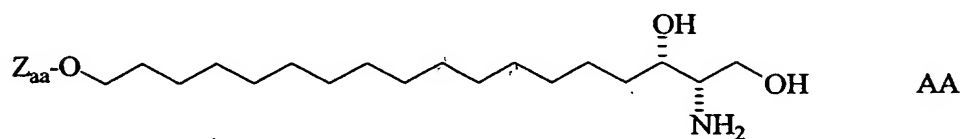
15

$R_{28}$  is selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms;

r is 0, 1, or 2; and

(iii) a moiety of formula AA:

20



AA

25

linker;

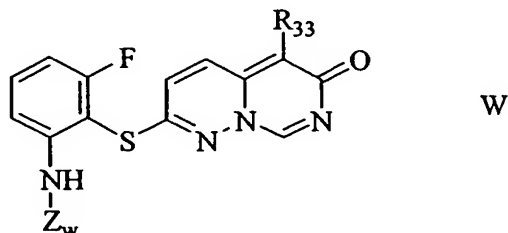
and further wherein  $Z_r$ ,  $Z_t$  and  $Z_{aa}$ , are covalent bonds linking the moiety to the

and stereoisomers and analogs thereof.

30

9. The compound of Claim 1, wherein each ligand in the compound of formula I is independently selected from the group consisting of:

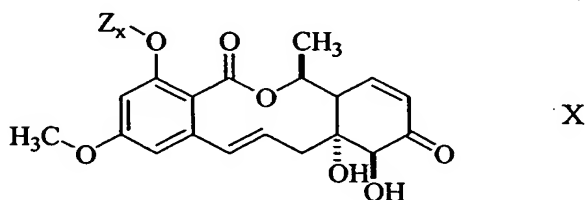
(i) a moiety of formula W:



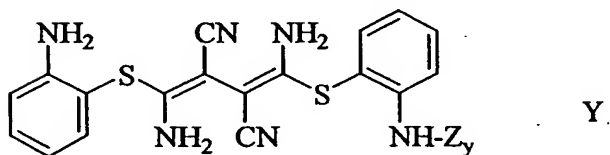
10 wherein

R<sub>33</sub> is selected from the group consisting of aryl and heterocyclic;

(ii) a moiety of formula X:



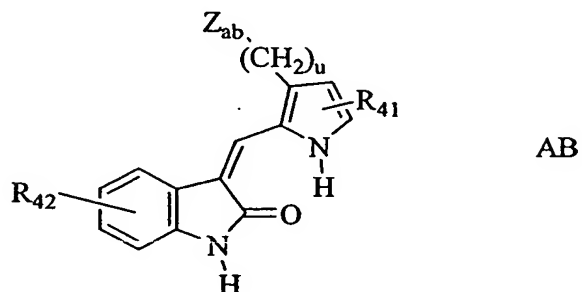
20 (iii) a moiety of formula Y:



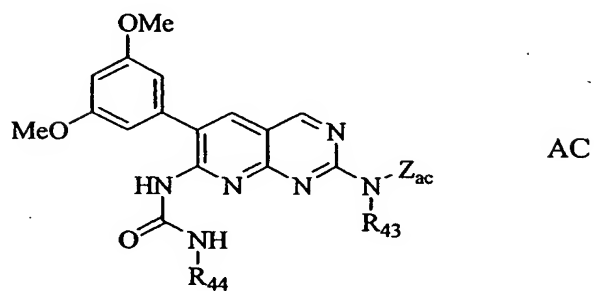
and further wherein Z<sub>w</sub>, Z<sub>x</sub> and Z<sub>y</sub> are covalent bonds linking the moiety to the linker; and stereoisomers and analogs thereof.

10. The compound of Claim 1, wherein each ligand is independently selected from the group consisting of:

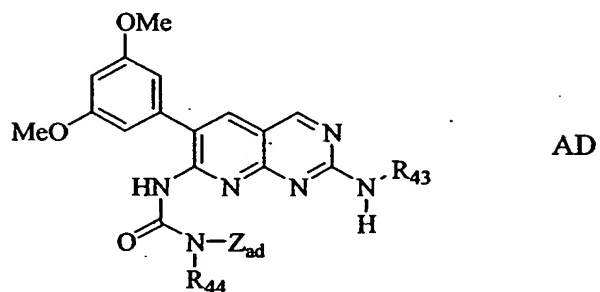
(i) a moiety of formula AB:



(ii) a moiety of formula AC:

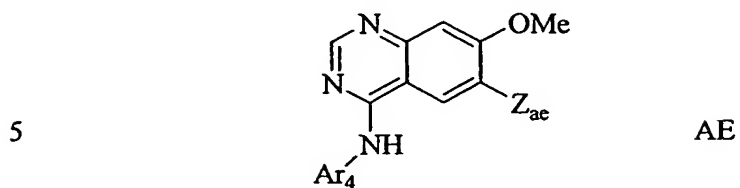


(iii) a moiety of formula AD:

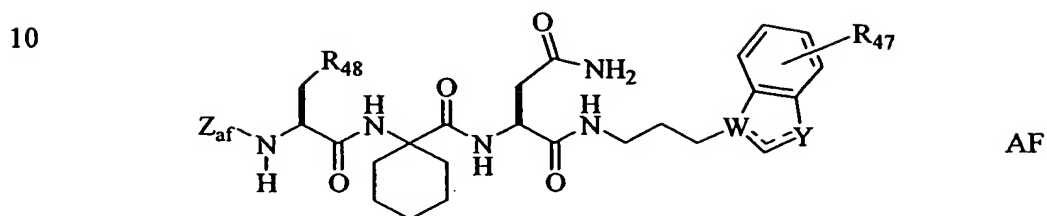




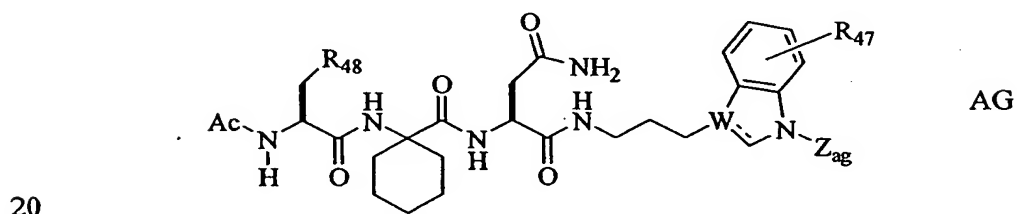
(iv) a moiety of formula AE:



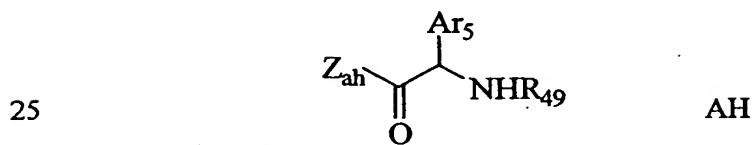
(v) a moiety of formula AF:



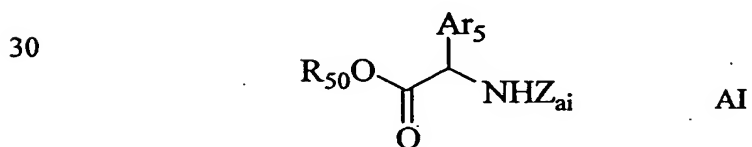
15 (vi) a moiety of formula AG:



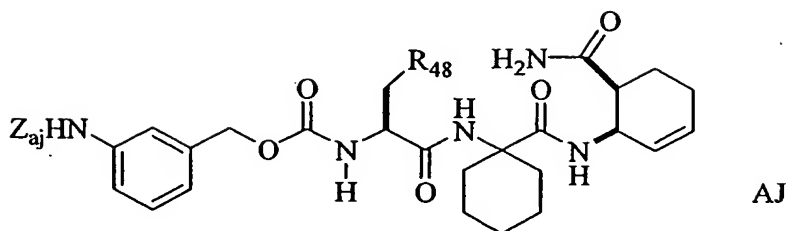
(vii) a moiety of formula AH:



(viii) a moiety of formula AI:



(vix) a moiety of formula AJ:



10 wherein

$R_{41}$  is independently selected from the group consisting of hydrogen, 4-CH<sub>3</sub>, 5-CH<sub>3</sub>, and 4,5-di-CH<sub>3</sub>;

$R_{42}$  is independently selected from the group consisting of hydrogen, CH<sub>3</sub>, -F, -Cl and

15 -NO<sub>2</sub>;

$R_{43}$  is independently selected from the group consisting of -Z<sub>ac</sub>, hydrogen, -(CH<sub>2</sub>)<sub>v</sub>-NR<sub>45</sub>Z<sub>ac</sub> and -(CH<sub>2</sub>)<sub>v</sub>-NR<sub>45</sub>R<sub>46</sub>;

$R_{44}$  is independently selected from the group consisting of -Z<sub>ad</sub>, hydrogen, -CH<sub>3</sub>, -CH<sub>2</sub>CH<sub>3</sub> and t-butyl;

20  $R_{55}$  is independently selected from the group consisting of hydrogen, -CH<sub>3</sub>, -CH<sub>2</sub>CH<sub>3</sub> and -CH<sub>2</sub>CH<sub>2</sub>NMe;

$R_{46}$  is independently selected from the group consisting of hydrogen, -CH<sub>3</sub> and ethyl;

25  $R_{47}$  is independently selected from the group consisting of hydrogen, 2-CH<sub>3</sub>, 3-CH<sub>3</sub>, 5-CH<sub>3</sub>, 5-Cl, 5-OCH<sub>3</sub> and 5-N(CH<sub>3</sub>)<sub>2</sub>;

$R_{48}$  is independently selected from the group consisting of p-C<sub>6</sub>H<sub>4</sub>-CH<sub>2</sub>P(O)(OH)<sub>2</sub>, p-OCH<sub>2</sub>COOH-m-COOH-C<sub>6</sub>H<sub>3</sub>, p-C<sub>6</sub>H<sub>4</sub>-OP(O)(OH)<sub>2</sub> and p-C<sub>6</sub>H<sub>4</sub>-CF<sub>2</sub>P(O)(OH)<sub>2</sub>;

$R_{49}$  is independently selected from the group consisting of acetyl, t-BOC, -Cbz, and -C(O)Ph;

30  $R_{50}$  is independently selected from the group consisting of C<sub>1-5</sub> alkyl (preferably methyl, ethyl and propyl);

Ar<sub>4</sub> is independently selected from the group consisting of 4-Cl-3-F-C<sub>6</sub>H<sub>3</sub>, 3-Br-C<sub>6</sub>H<sub>4</sub>, 3-Cl-C<sub>6</sub>H<sub>4</sub>, 3-F-C<sub>6</sub>H<sub>4</sub>, 4-Br-C<sub>6</sub>H<sub>4</sub>, 4-Cl-C<sub>6</sub>H<sub>4</sub>, and 3,4-dihalophenyl;

Ar<sub>5</sub> is independently selected from the group consisting of C<sub>6</sub>H<sub>5</sub>, p-C<sub>6</sub>H<sub>4</sub>OH, and other substituted phenyl groups;

5           u is an integer from 1 to 3,

v is an integer from 2 to 4,

W is N or CH,

Y is CH or N;

and further wherein Z<sub>ab</sub>, Z<sub>ac</sub>, Z<sub>ad</sub>, Z<sub>ae</sub>, Z<sub>af</sub>, Z<sub>ag</sub>, Z<sub>ah</sub>, Z<sub>ai</sub>, and Z<sub>aj</sub> are covalent bonds  
10   linking the moiety to the linker;  
and stereoisomers and analogs thereof.

11.   A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of any of Claims 1-10.

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12.   A method of treating a disease or medical disorder mediated by a protein kinase, the method comprising administering to a mammal a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of any of Claims 1-10.

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